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CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society Of America

Vol. XXI MAY-JUNE, 1949 No. 3

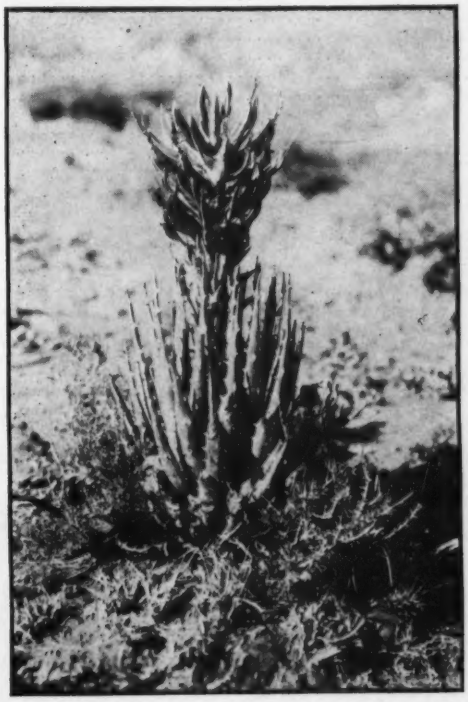

FIG. 42. *Aloe longistyla* Bak. Photo by G.W. Reynolds

CACTUS AND SUCCULENT JOURNAL

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FORTY-NINE CONVENTION NOTES

Your Convention Chairman spent five days in Arizona early in April completing convention details and covering a good portion of the route of the post convention three day field trips. Arizona has had the best winter rains in years which will result in an abundant spring growth. At low elevations, desert wild flowers were blooming in amazing numbers. There were not many flowers in the vicinity of Tucson and Phoenix as these bloom a little later.

Many of our members number amongst their prize possessions a copy of the book entitled "What Kinda Cactus Izzat." These folks will have a thrill during the opening session. The author, Reg Manning, Arizona's leading cartoonist and columnist as Chairman of the Board of the Arizona Cactus & Native Flora Society, will deliver the address of welcome.

Maybelle Place, one of our Past Presidents, her husband Charlie, Emil and Maria Bien and other Arizonans who really know their cactus spines, will be in residence in the Webster Auditorium of the Desert Botanical Garden, to act as hosts and fountains of information on most everything except politics and family troubles.

Post Convention Field Trip

This field trip will begin at Tucson on the morning of Wednesday, July sixth, and will end at Gila Bend on the eighth. The itinerary will include the Saguaro National Monument, Nogales, Ruby, Papago Indian Reservation and Organ Pipe National Monument. Wayne Thompson, the young fellow who draws the clever cover pictures for the Saguaroland Bulletin, will act as head guide. Wayne knows where every kind of cactus is found, all the Arizona birds and something of minerals. On this trip there will be a guide fee of one dollar per day for each person over sixteen years of age. For more detailed information ask your Convention Chairman to send you the Three Day Trip information sheet.

Commercial Men

There will be special sessions for commercial men during the convention's round table discussion periods. The California Cactus Growers Association, (commercial) will hold a special meeting in the Los Angeles area on Thursday, July seventh. All commercial men and their families are invited to attend. The Growers will act as guides and assist in providing transportation in the area for commercial men visiting Los Angeles. Exact time and place of meeting information will be available from your Convention Chairman during the convention.

Make Reservations Early

Information sheets and reservation forms have already been mailed to all members resident in the United States. Early reservations are very important. The convention will occur during a three day holiday period when it will be difficult for our caterer to secure additional supplies. We expect that large as it is, Autopia Motel Lodge will not be large enough to accommodate all who will wish lodgings there. The manager has promised to place the overflow in high class nearby Lodges at the same rates, but it will be more fun to be with the crowd. First come, first served, so the first to make reservations will be lodged in Autopia. Definite reservations will not be made until remittances in full have been received. All meal and lodging reservations must be handled through your Convention Chairman. In case of necessary cancellations, full refund will be made if notice is received by your Convention Chairman in time to avoid financial loss on his part. When making reservations, fill out fully the yellow card form and send with your remittance. If a receipt is desired, send both the yellow and the white forms. The white copy will be receipted and returned to you. Persons intending to make the three day post convention field trip may not wish to make Autopia reservations for the night of the fifth. Our scheduled events for the fifth will terminate at Superior which is sixty miles from Phoenix and almost half way to Tucson. Time and travel would be saved by going on to Tucson, where ample accommodations may be secured in excellent motor lodges.

HOWARD E. GATES, *Convention Chairman*
P. O. Box 247, Corona, Calif.

Important Note: I have just received word that Autopia has changed hands and is now known as "The Continental Guest Lodge." The former manager is still in charge and says that he is familiar with our arrangements and the same rates, etc., will be in effect. We do not want delegates hunting for the "Autopia."

FIG. 43. The author stands beside *Lophocereus australis* near La Paz, Baja California, Mexico.

Report From Desert Botanical Garden

Papago Park, Arizona

By WM. TAYLOR MARSHALL

In the August JOURNAL we described *Lophocereus Schottii,* its variety *Sargentianus,* and its monstrose forms. There are two other good species in this genus.

Lophocereus australis (Brandegee) B. & R., was first proposed as a variation of *L. Schottii* by Katharine Brandegee in Zoe. V:4. 1900, but was raised to specific rank by Britton and Rose in Contributions from the U. S. National Herbarium XII:427. 1909. In 1920, when volume II of The Cactaceae was published they reversed their stand and again reduced *L. australis* to a variety.

L. australis differs in several important particulars from *L. Schottii* and its variety. It is a much slimmer plant with more ribs and these characters were the factors on which Mrs. Brandegee made her varietal separation and on which Britton and Rose based their specific ranking. The most important difference, however, has not been mentioned and that is the habit of this species of forming a central trunk from which

FIG. 44. LEFT: *Lophocereus australis* grown in the Desert Botanical Gardens retains its arborescent habit. RIGHT: *L. Gatesii* growing in the same garden.

all of the branches arise without first touching the ground while *L. Schottii* and its variety send off branches just above the ground and the branches curve downward, touch the ground, and there root independently from the main stems.

L. Schottii var. *Sargentianus* when brought into cultivation soon resembles the species but *L. australis* retains its characteristic growth habit and remains much more frost tender than is *L. Schottii* or its variety, *Sargentianus*.

L. Gatesii Jones was discovered by Howard E. Gates and myself on March 21, 1933, at or near Aguja Ranch in southern Baja California. It has 10 to 15 ribs and is more heavily armed than any other *Lophocereus*, having 11 to 15 gray, subulate spines 1 to 1.5 cm. long; the spine clusters in the flowering stems show less difference, there being only 15 to 20 gray spines 4 to 6 cm. long. In *L. Schottii* and its variety, 3 to 7 very short subulate spines are noted at non-flowering areoles and numerous gray bristles at least twice as long as in *L. Gatesii* at the flowering areoles.

It is particularly significant that seedlings of *L. australis* and *L. Gatesii* are immediately recognizable when grown in a pan with *L. Schottii* seedlings and this combined with the the fact that neither of these species change their characters under conditions of cultivation make a strong case for the validity of the species.

L. Schottii and its variety *Sargentianus* are both found in Baja California and in Sonora but *L. australis* is confined to the tip of the peninsula of Baja California from La Paz south. *L. Gatesii* is limited to the district in which it was first found to the best of my knowledge.

BLUHENDE KAKTEEN

Because of the growing season now under way, we have eliminated the installment of Bluhende Kakteen in this issue to make room for cultural articles. The July-August issue will reprint the four pages that appeared in the last issue (because of errors) with the next four pages. If you like the color plate in this issue please show it to your friends so that we may increase our circulation by 1000 readers during 1949 (this insures a Roster of Members for 1950). Watch for the next JOURNAL and a beautiful succulent in color. You should not remove this series of colored plates; keep your JOURNALS intact.

FIG. 45 *Haworthia viscosa* (L) Haw. near Baroe. Photo by F. J. Stayner.

COLLECTING SUCCULENTS IN SOUTH AFRICA

By F. R. LONG

PART III Uitenhage to Springbokvlakte

In a previous article I have taken you on a journey from Port Elizabeth to Uitenhage. Now we turn on the north side of the latter town where the so-called, mountain road heads northwest to the town of Steytlerville.

On top of the first rise there is an amazing piece of poor (agriculturally speaking) land with bush up to 5 feet in height on either side of the road, and here, growing side by side are two rare plants, the Cycad, *Encephalartos horridus* Lehm. with its sharp thorny leaflets of a beautiful gray-green, and the so-called "Crane's-bill," *Strelitzia juncea* Link (*parvifolia*) with orange and ink-violet colored flowers. *S. juncea* is the same as *S. reginae* Banks, sometimes called the "Bird of Paradise" flower, except that the leaf has no blade but is in the form of a sharp cylindrical, pointed stick. There is a difference of botanical opinion as to its specific rank. This area should be declared a minor natural reserve so that these two plants might be saved from destruction.

For a further 25 miles, a small Haworthia of the *setata* group is found and I have collected forms every 5 miles or so. The result is that I am more convinced than ever that many of the newer Haworthia species are geographical varieties caused by the influence of soil, altitude and atmospheric humidity, including rainfall. The erection of so many new species should be discouraged.

We drove on along the north side of a range

of hills culminating in the "Cockscomb," a peak 5781 feet high. The influence of the sea and southeast wind are no longer felt here and the result is an arid belt that has been heavily overgrazed by sheep and goats with disastrous results to the meager flora. We came to an undulating plain known as Springbokvlakte (a vlakte is a sandy, flat area over which water flows during rains). Here we found the only Lithops in the whole area, *L. terricolor,* one of the "stone plants" with a beautiful flower. Lithops are very hard to find because they are so perfectly camouflaged and completely bury themselves up to the tips of their two succulent leaves. Almost on top of them but at very irregular intervals, we found two rare Haworthias in the Retusae group, *H. asperula* Haw. and *H. pygmaea* Poelln. If these are not in flower, the only way to find them is to go over the ground on hands and knees, systematically searching every little tuft of grass, Ruschia plant or miniature Chrysocoma bush. Here then, on the same flat we have three rare succulents covered over with a wealth of low-growing mesembryanthemums including *Glottiphyllum bidentatum,* as well as a *Hymenocyclus* species.

Not half a mile away there is another even rarer Haworthia, *H. Woolleyi* Poelln. Only a few clumps (rarely single plants) were seen on an uninteresting rise of rocky ground less than an acre in extent. As far as I know, it has been found in no other spot. A few years ago, Major Woolley and I were collecting here. He took the ground to the right and I took the left of the road, not 300 yards away from each other. Soon after we had separated we both gave an excited shout. To the right was the first discovered plant of *H. Woolleyi* Poelln, while to the left was a form of *H. Blackbeardiana* var. *major* Poelln. I ran over to Major Woolley and on the way stepped onto yet a fifth species, *H. Schmidtiana* Poelln. not unlike *H. nigra* Bak. the long-lost and as far as I know, never rediscovered species. We returned to the car for a flask of tea and to regain our breath after so much excitement, then strolled up onto higher ground to find two lone plants (and no more) of *H. sordida* Haw. many miles from the spot near the Sundays River where it was first rediscovered.

H. asperula Haw. and *H. pygmaea* Poelln. seem to favor a light, sandy loam in the meager shade of a miniature bush, whereas *H. Woolleyi* Poelln. favors little soil at all, but was found wedged in the cracks of soft rock—very unlike its close relative *H. venosa* of the Western Province. The Gasteria hereabouts proved to be the true *G. nigricans* Haw.

A point to remember in this tale is that here in an arid and apparently uninteresting area of say a square mile were six distinct species of Haworthias, each on its own plot, as it were. They did not occur together (except *H. asperula* and *H. pygmaea*), yet they were no great distance from one another and there were no intermediate forms. Furthermore, as far as diligent search proved during several subsequent collecting trips in the same district, four of the six species do not occur elsewhere. Is this one of nature's mysteries or have the plants been eaten out by goats and sheep?

Another Aloe that I have not previously mentioned is found hereabouts, *A. arborescens* Mill. This species has a very wide distribution. In fact it is found in the Transvaal and Southern Rhodesia, but there are several distinct varieties. It makes a fine but impenetrable hedge, with its brilliant, crimson flowers appearing in early winter.

To vary our itinerary we took a road leading due north, striking Baroe on the railway line—Port Elizabeth to Klipplaat—to see if we could locate *Pleiospilos simulans* N. E. Br., which we

FIG. 46. *Aloe arborescens.* Photo by F. R. Long.

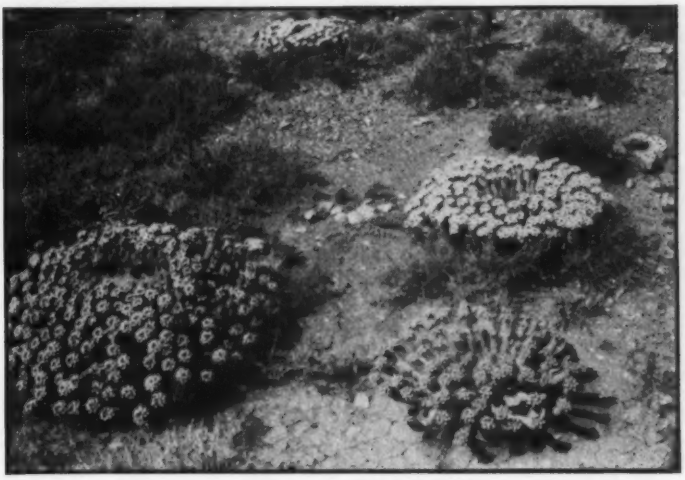


FIG. 47
Euphorbia esculenta Marl. on road to Baroe. Photo by F. J. Stayner.

were lucky to do. An Apicra very plentiful here was *A. foliolosa* (Haw.) Willd., and another Aloe, *A. variegata* Linn., the "Kannedood" or "never dead," one of the first living succulents to be introduced into Europe from South Africa. Its flowers are a lovely salmon scarlet on a stem 18 inches high, rising out of the unique mottled, partridge breast colored rosette of leaves. Still another Aloe found here but not collected on this trip is *A. longistyla* Bak.* These two species together with *A. humilis* Mill. make a brave trio of dwarf Aloes that should be grown in all collections. They can be raised from seed. *A. longistyla* Bak. does not take kindly to cultivation I found, but the other two are easily managed subjects, in fact are "Kannedoods."

Before reaching the railway line we came to a hillside covered with large white stones which we investigated. This was facing north in the fierce blaze of the midday sun; the radiated heat must have reached 130° at a guess. It was terrific, but here were numerous clumps of the most perfect specimens of *Haworthia viscosa* (L.) Haw. and a deciduous Pelargonium with a succulent stem. The Haworthias were 12 inches high was as many as 20 growths per clump. Under these conditions the leaves turn into a lovely olive-brown and only in the shade of a bush or rock do they assume the typical dark green found in the greenhouse. A well established pot of *H. viscosa* could easily exist from October to May on a top shelf under unshaded glass without water or any attention. *Euphorbia ferox* Marl. is another plant found here liking similar conditions.

Running along parallel with the railway line we came across *Haworthia altilinea* var. *mucronata* Poelln. just outside Wolvefontein, and further along, *H. Jacobseniana* Poelln. near a place called Kleinpoort. Another interesting plant noticed from time to time was one of the so-called "Finger-pols," *Euphorbia esculenta* Marl. with its dense flower heads of white, also *Faucaria albida,* a delightful and easily grown plant.

When collecting fat, juicy plants such as *Pleiospilos simulans* N. E. Br., it is well to select the young seedlings, which move better and do not suffer the severe check that older plants experience. Two other Pleiospilos are known, one *P. Bolusii* found further to the north and *P. Nelii,* the "Anagga Vygje" or "Zebra Fig" from the Prince Albert district. I would advocate the raising of such like plants from seed every time. The results are better, more interesting to the grower and what is more important, the country-side would not be robbed of its treasures. If every one practised this excellent advice there would be little point in passing Wild Flower Protection Acts.

To be continued

*See front cover.

From Oklahoma

Gilbert Taylor grafted a 1-inch plant of *Notocactus scopa* var. *ruberrima* on *Lemaireocereus marginatus* in January, 1945, which produced three flowers in 1947 and 43 flowers in 1948. The plant, exclusive of the stock, is 8 inches tall and 3½ inches in diameter. This shows what a good graft will do.

FIG. 48. Modern house with a glass wall makes a fine home for succulents.

LIVE WITH YOUR PLANTS

By MARSHALL DAUGHERTY

Director of Art, Mercer University, Macon, Ga.

Are you planning to build a new home when prices level off? Do you plan to add a greenhouse sometime later? The conventional, old-fashioned house will accommodate only a few plants stuck in a few sunny windows. How often we hear, "I want more plants, but I simply don't have any more room. Guess I'll have to build a greenhouse when I can afford it." Thus another budding cactophile is nipped in the bud. Suppose I can show you how to have the greenhouse with the home at no additional cost. Interested? Well, here goes.

Fill a glass completely full of water, take a handfull of nails and drop them one by one into the glass. It will take up quite a few nails before overflowing. My solution for the greenhouse-home combination is something like this childhood experiment in capillary attraction. A well designed, Modern house will care for a large cactus and succulent family, in addition to a house full of human inhabitants, without using up costly square footage.

First of all, you must be convinced that the only sort of house worth living in is a Modern one. Modern is not a style like the Modernistic which prescribes a flat roof and a picture window, but it is a way of thinking, a method of enclosing the living needs and interest of a family. If you have become addicted to the Peyote and its strange and fascinating cousins, then take them into the busom of the family in a Modern house. Don't apologize for them by shutting them away in the backyard or basement. Bring them into a living room which has included them in its plan.

Many books have been written on home planning, but only two* are needed to put you on the right track. If you are serious about building soon, dash out and order these books right away, read them and then re-read this article. These books will, I believe, convince you that only a Modern home is worth building.

We were convinced, and our house, as we

**Tomorrow's House* by Nelson and Wright, Pub. Simon & Schuster, 1945.

**If You Want to Build a House* by E. B. Mock, Pub. Museum of Modern Art, 11 West 53rd St., New York 19.

designed it, shaped up along these lines. It has large areas of plate glass (not windows, but window walls) oriented to the south and east (Fig. 48). These window walls open to a private view of garden or landscape, not to the street, and give a sense of openness and unity with the outdoors. All this glass also gives sufficient sun and light for our most demanding succulents. The east window walls admit little direct sun in the winter, but provide ample light for dormant plants.

By placing a shelf (Fig. 48) at the sill line 24" from the floor, we secured 45 square feet of plant space in our living room alone without in any way sacrificing livability. Adding similar shelves in other rooms at sill level alone, we secured another 55 square feet, making a total of 100 square feet at sill level. In addition, we have several tiers of shelves in some windows (awning type) and space for hanging baskets of Stapelias and trellises of Epiphyllums. It amounts to as much space as the average home greenhouse contains, but the space is much more usable, just as our storage walls provide more usable space than the old-fashioned attic. We now have over 400 plants and room for more (anyone having extra crests, please note).

Our heating is of the radiant floor panel type using hot water pipes in the floor slab. This provides comfort from warm surfaces without excessive heating of the air itself. The plants seem to enjoy this type of heat, and I have experienced no difficulty in inducing their winter's nap by simply withholding water at the proper time. Cuttings root quite well in the dead of winter when the pots are placed on the warm floor. In summer we sink the pots of all plants but Stapelias and Mesembryanthemums, or those requiring a summer rest, into sand and gravel beneath a pine tree, which makes a natural lath house.

What have we gained by taking our plants in to live with us? The most important, and of course the least tangible, is the sense of companionship and just plain enjoyment their nearness gives. As I sit in my easy chair at night, my eyes rove from one beauty to another. New shapes and combinations of line and form are constantly showing themselves to me in the perfect comfort of home. Just the endless gradations of green in the various plants never ceases to amaze and thrill me. A last fond glance at them before going to bed and a sleepy appraisal in the morning adds a deep and enduring satisfaction to life not known to the greenhouse grower.

Another advantage of the indoor movement is the sharp reduction of pests. Closer observation prevents infestation and the cleanliness of air and shelves is added insurance. Cactus and succulent plants provide a fine decorative addition to our Modern house and make themselves quite at home, while making our home quite a place.

Our home also provides ample space for our professional work in sculpture, painting, ceramics and weaving, all within a total area of 1660 square feet of space. Of course the children's sand table has been commandeered for the winter, since its metal lining makes a swell tray for small pots. The dining table makes a fine potting bench, and as long as I don't get too much dirt on the floor, this custom will be tolerated. By the way, men, before you think too much about bringing your plants inside, get your wives interested in your hobby. This is definitely the first step. Our only disagreement is about who will tell visitors the history of each plant.

Believe it or not, our home cost $5.00 a square foot in 1948. We designed it, drew all plans and handled the contracting ourselves. A good Modern architect will help you to economize, but be sure that he understands your needs and interests at the beginning. Tell him that you want a home which *works* and that you are more concerned with its function than with an exterior style. Confess to him your weakness for cacti and demand that he give them their place in the sun.

A NEW BOOK FROM ENGLAND

Succulent Plants Illustrated is the title of the new book by the well-known Vera Higgins, author of *The Study of Cacti* and many translations. There are 72 pages 7x10 inches including 24 full pages of drawings by the author; 130 different plants are illustrated so that beginners can quickly identify their succulents. For one handy with water colors, these plants are perfectly reproduced for hand coloring. The object of the book is to give some idea of the variety to be found amongst succulent plants, and because it is not always easy to picture a plant from a written description, illustrations are the chief feature. The accompanying text tells briefly how plants are related to each other, where they grow and how they can be cultivated. Copies are available for immediate delivery at $2.50 postpaid ($2.60 in California). ABBEY GARDEN PRESS, Box 101, Pasadena, California.

BOOK ON CULTURE

The Cultivation of Succulent Plants—Jacobsen. We have just received a large shipment of this book from England. A few years ago we had to return your orders since the supply was quickly sold. This 104 page book was translated from the German by Vera Higgins and provides general cultural directions including chapter on: Imported plants, Seed production, Propagation by seeds, Vegetative propagation, Diseases and pests, and Labeling. There are 8 pages of illustrations. Price $1.65 postpaid in U.S.A. Foreign $1.75. ABBEY GARDEN PRESS, Box 101, Pasadena, California.

FIG. 49. *Myrtillocactus geometrizans* growing with *Lemaireocereus marginatus* and *L. chende* near Matamoros, Puebla.

A NATURALIST'S DIARY ON THE MEXICAN WEST COAST

PART V

By E. YALE DAWSON

Friday, December 27—Guadalajara, Jalisco

Last Sunday morning we left our fine quarters here in the city for another adventure in the back-country. Guadalajara is at an elevation of something less than a mile and the climate is both cool and relatively dry at this season. Our destination this time was the jungle coast of Jalisco, and our ambition was to obtain marine algae from another virgin collecting ground, near Manzanillo.

We started down the splendid paved highway toward Mexico City and turned toward Autlan after a little while onto a graded road which led down through a series of hill-crested valleys,—some full of broad lakes, others criss-crossed with stone fences. Through little towns all with rough cobblestone streets we went down into the valleys, each getting a little warmer, a little more vegetated and moist than the last. In the upper ones, the rocky marginal hills were covered with groves of great candelabra cacti: *Pachycereus, Lemaireocereus* and huge opuntias, but these gave way more and more to high brush and trees. In order to reach our destination in time for the tides we drove for a while after sundown, and in doing this we passed in the darkness the principal division between the dry and the moist, the cool and the warm. When we awoke in the morning we found ourselves on the western slope of a high mountain range, densely wooded, mostly with tropical oaks, looking down into the moist jungle lands bordering the Pacific.

Early in the morning we proceded slowly down the twisting mountain road, collecting orchids along the way, for the oaks were well provided. In the low lands it was already hot by 9:30 and as we went on through little ranchos, sugar-cane fields, past cane pressing mills and Indian villages, we entered magnificent forests of giant trees laden with great masses of epiphytic orchids and bromeliads, most of them a hundred feet overhead where we could only look up and wonder. Now and then we passed through a palm grove so dense as to shut off the sun; wild banana plants grew among the ferns; the lovely streams were crowded with big "elephant ears," and gaudy butterflies danced their scherzos of color in the sunbeams. Once in a while we would stop as we crossed a stream to capture a few of the choicer ones as they sat sipping from the moist sand, and now and again through the shade we would detect the slow, awkward flapping of the great, broad-winged, irridescent *Morpho*.

All day we went through the jungles, coming finally in the evening of the day before Christmas to the little village of Barra de Navidad on the shore of a mangrove lagoon.

The first two hours of our Christmas morning were delightfully comfortable, but as the sun rose, the heat became overpowering and wilted us to the point of siesta. Despite the temperatures, my algal collections had to be made, so I hired a boat and headed out over the humid lagoon toward a point of rocks on the open coast. The hot, tropical waters proved so unproductive of vegetation that the tide had scarcely begun to flow when I took to the shore to collect cacti. Despite the wet forest type of vegetation of the region, the exposed, precipitous rocky hills facing the sea provide a habitat favorable to these plants, and on the first granite cliff I came upon two excellent species: one, the little known *Cactus oaxacensis*, heretofor known only from the Isthmus of Tehuantepec region, and, hanging in pendulous masses on nearly vertical walls, a beautiful white-spined *Mammillaria* which seems likely to be a new species.

Tuesday, December 31—
near Zacapu, Michoacan

What a strange New Year's Eve this is. We are parked on a cool hilltop amid orchid-covered trees at about 6500 feet in the middle of the state of Michoacan. We've just passed through several small villages where the lights are blazing in preparation for the celebration tonight, but we have had our day and we are ready for sleep.

This morning after a scenic hour on the Mexican highway, we turned off toward Uruapan and went up through the oak and pine forests toward the famed volcano of Paracutín. For a while it looked as if we were driving through the forests of upper Mono County, California, but when we entered the volcano county the scenery changed. In every valley and among all the hills are old cinder cones, some large, some small, some with lava plugs projecting from their tops, others with deep craters. All of these old ones are more or less overgrown with trees and from the forests along the way we saw the Indians bringing down wood on their burros. Most of the small towns on the Uruapan road are of Indian population, each man wearing a blanket with a head hole in the middle, each woman with a long, dark dress and a brightly colored petticoat peeping out beneath and brushing her bare feet as she walks.

By eleven thirty we were entering the ash, and with a strong wind blowing from the southwest a great quantity of dust was rising into the air from the fine volcanic ash which blankets everything. In the Indian village nearest the volcano we encountered a flock of little boys each of whom wished to be our guide, and purposely misdirected us so that one might be necessary. We had traveled a mile out of town before they finally became discouraged in running after us. On across the deepening ash we could see the great flows of broken, twisted, irregularly solidified lava lying to the south toward the base of the volcano which belched forth immense clouds of smoke and ash as it rumbled within the earth. An Indian town which had been a flourishing place of cornfields and green pastures lies buried beneath the ash, only a few top stones showing. Trees that had shaded the town are engulfed

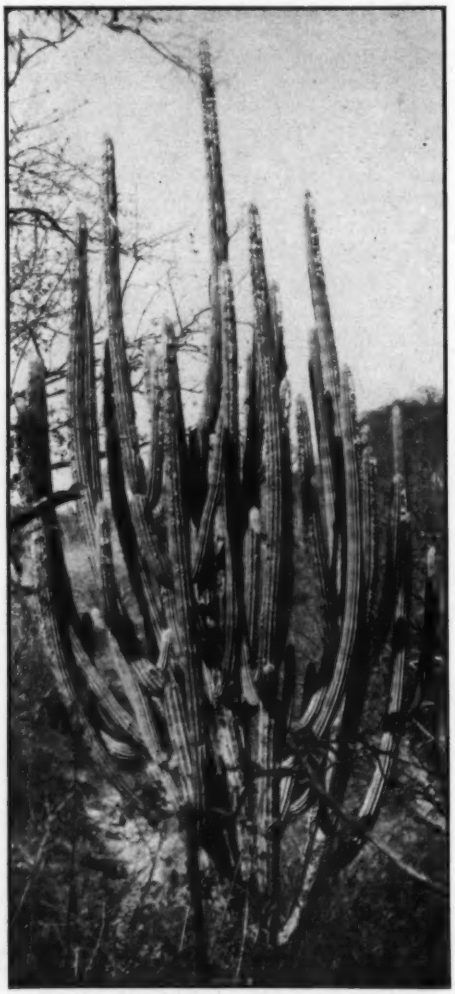


FIG. 50. *Cephalocereus chrysacanthus* near Tehuitzingo, Puebla.

and dead. A few outlying adobe buildings are still standing beside the flow, their roofs crushed in by the weight of ash and rocks. Beyond, where the flow stopped are crushed walls, timbers half under, half free from the lava. We climbed up onto the flow, forty or fifty feet thick near the edge. Two hundred yards inside the flow stands a monument to God,—the bell-tower of the church, clean and unmarred in the midst of the lava.

We drove on across the cinder flats, through the dead forest and then hiked up to the hills of cinder where the rocks are still hot and sending up sulfurous vapor. On some of the hot piles yellow crusts of sulphur are being deposited, and as at intervals quantities of hot gases are forced to the surface little whirl-winds start up and grow to immense proportions, developing into great twisters which carry dust into the air thousands of feet.

Everywhere the dust was choking us. What Paracutín didn't cough into the air, the wind swept up and twisters lifted up. We felt dwarfed and helpless before the awesome spectacle of destructive power of the earth's still restless crust.

Sunday, January 5—Mexico City

This place is nothing like the tropics from which we have come. It is bitter cold here; we wear all the heavy clothes we have by day and add two blankets to the bed at night. Beside the cold, the noisy confusion and rush of humanity in this place are quite overpowering after our long period of rural life and travel. We'll be mighty glad to get out of this mad city and down into God's country.

We've had cool or even cold weather for several days now, for the road from Morelia to Mexico crosses very high mountains covered with pine, cypress and fir. At Mil Cumbres it began to rain on Friday and by evening we had a hail-storm. As is our custom, we have hard luck at inconvenient times, and during the hail-storm the fan-belt broke. Getting the spare installed in the dark was quite a trouble,—and cold! All of this has been a very antithetic experience after our recent holiday travels to Barra de Navidad.

Tuesday, January 7—Oaxaca City, Oaxaca

These are days such as I dreamed of 15 years ago as a young cactophile when the first vague tales of the cactus wonders of southern Mexico reached my ears. I can scarcely contain myself now in my enthusiasm, and despite an attack of the same intestinal infection which laid Maxine low in Guaymas, I'm picking up strength to take in the fascinations of this marvelous country of xerophytes.

Having lightened our load in Mexico City by leaving the whole stock of our collections to date for safe keeping until our return next month, we left Sunday afternoon to cross the mountain pass over the shoulder of Ixtaccihuatl toward the valley of Puebla. Again we went up through dense pine and fir forests where the fog and condensing rain were clammy and disagreeable to my weakened physique. Crossing the summit above Rio Frio at about 10,500 feet we began to drop into the valley that stretches out toward Puebla, and as we went down, the clouds opened above us and we came out into the sun.

In the valley are hundreds of villages, and

surely a thousand churches. I have never imagined so many churches. There must be a church for every few hundred people, for their spires and bell-towers dot the landscape everywhere. Some are very ancient and most are more or less brilliantly colored with glistening tile domes or facades. Some are tiled completely from courtyard to tower in the most intricate and brilliant of patterns.

Hardly had we passed Puebla and turned toward the south when I saw that we were entering the great cactus country of Oaxaca. The moist tropical forests were not here. The pine and oak forests of the mountains were not here. The vegetation was open, rather sparse and was taking on more and more of a desert aspect. By the time we reached the village of Tepeojuma opposite the smoking volcano of Popocatepetl the big cacti were beginning to dominate the landscape. The huge candelabra of *Lemaireocereus Dumortieri* could be seen against the hills in the distance and *L. pruinosus* stood in abundance along the road.

Monday morning was market day in Izucar de Matamoros and I spent two hours photographing the colorful scenes of a Mexican village in full economic activity. When my film quota was spent, we turned onto the road again, but we had gone hardly five miles before the splendid array of cacti caused me to stop again. On a single hilltop out of Matamoros we found arborescent cacti of numerous species, *Lemaireocereus Weberi, L. marginatus, L. pruinosus, L. chende, L. Dumortieri, Pachycereus grandis, Myrtillocactus geometrizans.* Here also *Mammillarias, Coryphanthas,* and *Ferocacti* began to become apparent on the arid hills.

The *Lemaireocereus Weberi* specimens are the most magnificent, massive plants of the candelabra type I have ever seen. Some may have two or three hundred limbs and most of these arise from a tremendous bole only a few feet above the ground. We have noticed frequently how farmers have used these plants as hay mows by cutting out all of the branches except the exterior ones, thus forming a broad platform in the center of the plant surroundde, as it were, by a fence of erect branches, and just high enough to be out of reach of the cattle.

When we reached the Rio Atoyac we were in for another surprise. I had checked my copy of Bravo's *Cactaceae de Mexico* for the various species recorded from this area and had found no mention of any unbranched, columnar *Cephalocereus,* yet here we encountered a forest of a gigantic species, entirely unbranched and much more robust than *C. mezcalaensis* which geographically is the nearest thing to it.* *Cephalocereus chrysacanthus* appeared here, several beautiful Mammillarias including *M. elegans, Ferocactus nobilis* and a multitude of xerophytes other than the cacti, all of which compel me to project myself to a time in the future at which I

*This has recently been described as *Cephalocereus mezcalaensis* var. *robustus* Dawson, Occ. Papers, A. Hancock Found., 1:9. 1948.

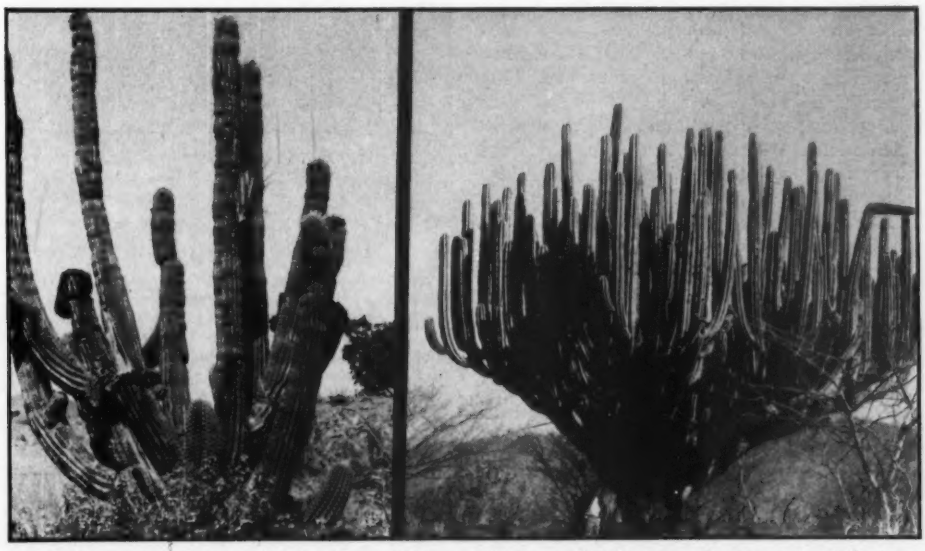


FIG. 51. LEFT: *Lemaireocereus Treleasei* near Mitla, on the Oaxaca-Totolapam road. RIGHT: *L. Weberi* near Rio Atoyac, Puebla.

can come back here to collect and study these plants with no other object in mind.

This afternoon at Nochixtlan on limestone hills among oaks and strange little palmettos we collected both Mammillarias and orchids at the same spot, the one on the ground, the other in a tree directly above. On the hills near Tamazulapan, just to the west, we had already found *Escontria chiotilla* and *Lemaireocereus stellatus.* Now these are added to the flora and new things continue to appear.

Across southern Puebla through northeastern Oaxaca we passed from one valley into another, each time crossing forested hills a little lower than the last, until we at length came down once more from the pines into the broad valley of Oaxaca. Each valley has its towns and its churches, many of age and magnificence. At Yamhuitlan stands a gigantic church of the seventeenth century, long used as a monastery and headquarters of the Catholic Church in the area. Its massive limestone blocks are cracked and broken under the strain of great weight and time, and now it stands solitary and desolate against dry, yellow, treeless hills, long eroded from continual plowing, blowing, and washing away of the soil. Around it the forests have been gone for centuries and the badlands have crept on, far up the slopes of the mountains.

We are camped now on the south edge of the valley of Oaxaca near the archeological wondertown of Mitla. The plain between Oaxaca and Mitla is replete with cacti. *Myrtillocactus Schenkii* forms fine groves with scattered *Lemaireocereus chende, L. stellatus* and *L. Treleasei,* all surrounded by thousands of plants of such Mammillarias as *M. mystax, M. Karwinskiana,* and *M. confusa,* together with Coryphanthas and Ferocacti.

One botanical experience has been crowded upon another down here, for to top it all, this afternoon we saw the famous Tule Tree, *Taxodium mucronatum,* with its million pounds of timber and its trunk well over a hundred feet in circumference, occupying the courtyard of the little blue and white church of Santa Maria del Tule.

To be continued

FROM OREGON

Continued from pg. 39 March-April JOURNAL

You asked where I keep my plants in winter. I have a Hobby Greenhouse 9x16 heated with electricity. I'm so very crowded there is only a three foot space between the sand tables—I almost have to walk in and back out. So my husband has decided to build a larger one.

I keep the temperature, or tried to keep it, around 45° to 55° last winter, but sometimes it was lower. Yes, I try to keep my Orchid Cacti dormant during winter. I keep them moist most of the time, but I don't let them stay dry only a short time. The cacti and other succulents are watered sparingly in winter; some once a month, others not that often, and some get no water during winter.

The way I keep my plants bright and healthy is by proper spraying with Volck and Red Arrow—a mixture of both makes an effective spray; I use this mixture every three months and Red Arrow other times. I do not allow one ant to get a toe hold and spiders are kept out.

My little *Rebutia senilis* is surrounded with about 20 buds and it is only March 1. I do keep the sand wet in the sand tables.

MRS. ALICE DYKES.

CACTUS SEEDS

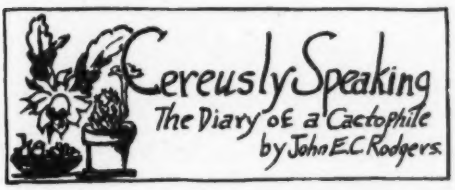
Fernando Schmoll, Cadereyta de Montes, Qro., Mexico, has a new list of available cactus seeds.

FIG. 52. Curt Knebel's new double Epiphyllum hybrid No. 93. Phyllocactus flore pleno.

CURT KNEBEL'S NEW BOOK

By Werner Engelhardt, Edited by Gertrude W. Beahm

Phyllocactus is the name of his new book that describes his life-work in hybridizing Epiphyllums. Curt Knebel is our oldest propagator of these plants and it is his hybrids that first attracted hybridizers in this country. This life history includes: Laws of Nature of Propagation, My Methods as a Propagator, List of My Originations, Cultivation and Propagation of Phyllocacti, Care of Phyllocacti, etc. The booklet is in Mr.Knebel's own words without changes in his nomenclature. It is understandable, practical, and most valuable for every grower of Orchid Cacti. We are fortunate to have the lifetime experiences condensed into such a practical book. Published by Abbey Garden Press, Box 101, Pasadena, California, and ready for mailing on May 30. Price $1.50 postpaid. Order now so that you may apply his methods during the growing season of these hybrids.



The Orchid Cacti (man-made hybrids) as well as the Epiphyllums (true species) are favorites of long standing as single plant specimens such as Deutsche Kaiserin, Ackermannii, or Epiphyllum oxypetalum. William Watson in *Cactus Culture for Amateurs* (5th edition) states, "The Epiphyllums are perhaps the most beautiful of all cacti, and the most useful in a garden sense. They have been cutlivated in English gardens for more than 200 years for it was in 1710 that *E. phyllanthus* first flowered in the Apothecaries Garden at Chelsea. The majority of the kinds now in cultivation are the result of cross-breeding."

My first experience with Epiphyllums was in Obelin, Ohio, while I was a student in Oberlin College in 1920-1924. Here the large red-orange flowers of *Ackermannii* hung from the pendant stems in great profusion from the plant of the Fowler family where I roomed. A cutting from this plant along with the Christmas Cactus became my first two cacti when I began collecting in 1928. It is still a favorite. I'm glad to see that it is to be given generic rank (*Epiphyllum Handbook* pg. 156). I have six different plants under the same name collected from plants in cultivation from Missouri to New York state. The blooms vary from red-orange to orange-pink on stems that are flat, triangular, and whip-shaped. The stems have spines on the triangular types. I have the true species of *E. phyllanthus, E. oxypetalum, E. strictum, E. crenatum, E. Darrahii, E. "Hookeri," E. guatamalense,* and *E. Pitteri.* All are white, night-bloomers. I also have some of the "early" hybrids such as Cooperi.

In 1936 I visited the Burke Estate at Chagrin Falls, Ohio, and saw a collection of "Epiphyllums" called Phyllocactus, which had been assembled by the father of Mrs. Burke from European hybridizers and Epiphyllum growers. I still have cuttings from some of their plants which have short, broad, "ruffled" stems or 5-foot narow strictured type of stems. The flowers are light pink, white with brown sepals, and off shades of red and orange. They are all housed in a cool room off my greenhouse but do not bud until mid summer.

In 1938 I saw my first Orchid Cactus growing in Dr. Machwart's greenhouse at Parma Heights, Ohio. He kept them on a slat shelf below the center ridge of his greenhouse (East-West). Lath shades covered the south side and ventilators. Moisture from the wet-down floor and benches and plenty of fresh air made them bloom prolifically. The plants lost some of their lush green during the hottest part of summer which made the Doctor seek better methods of shading later. He used decayed cow manure and sand in 6-inch bulb pots for his Orchid Cacti. The only trouble he experienced was that his plants being allowed to grow naturally, became too heavy and lifted themselves out of the pots. Later he used the bamboo stakes and tied the stems up to conserve space and to keep the plants in the soil.

E. J. Fish, Strongsville, Ohio, is an enthusiastic cactophile. He likes Orchid Cacti but thinks they are too rank in growth for limited greenhouse space. He has 18 or more that he keeps in the SE corner of his N-South greenhouse. He uses sand, garden humus and well decayed cow manure. He has a fine display of flowers between March and June with Gloria (orange-red), Conway's Giant (red), Vive Rouge (vivid red), Padre (pink), Rosette (pink-orange), Peacockii (red-purple), Hermosissimus (purple-red), Professor Ebert (purple), Deutsche Kaiserin (pink), Kinchinjunga (white), and others.

The range of shades is not complete but the colors are gorgeous. Most of these bloom over an extended period which gives the fancier a sense of satisfaction. He allows the stems to grow natural with the plants close together which supports the stems but makes it difficult to study the individual plants.

I have the following hybrids: Roseum Superbum, Magenta, Agatha, Eden, Hermosissimus, Padre, Conway's Giant, Vive Rouge, and Sun Goddess. I have grown most of these from six-inch cuttings from labelled plants (India ink directly on stems) secured from reputable dealers in Cleveland and Sandusky, Ohio, and Rochester, New York. This is the third year blooming for Eden, Agatha, Vive Rouge, Padre, Roseum Superbum, and Hermosissimus, while it is the second year for Conway's Giant and Magenta. Sun Goddess is in the 3-stemmed stage so I cannot expect blooms until late this fall or next spring.

I use 2 parts of leafmold, 1 part good garden loam, 1 part coarse sand and gravel, and 1 part decayed straw-cow-manure mixture. This is porous enough to drain quickly, compact enough to hold the roots firmly, and rich enough to encourage fine sturdy stems and firm sure-to-bloom buds. I avoid all lime even steamed bone meal because of its neutralizing of the "slightly acid" nature of most successful growers' soils.

All of us use a top dressing of well decayed cow manure and sand in the early spring when buds begin to appear and again after flowering. Old and bloom spent stems should be cut off to encourage new growth and new sources of buds. "Vigoro" can also be used if it is used when the plants are wet down but I prefer natural fertilizers. Our plants are never allowed to become dry at the roots but the waterings should be light during November, December, and January.

Most collectors in these parts set their plants out under bushes in the yard during the summer months. The true species seem to thrive on this treatment but we who own Orchid Cacti do not take them out of our shaded greenhouses unless we have lath protection. When a plant blooms it is usually brought up on the porch or into the living room where neighbors oh! and ah! at the beauty.

Everyone that sees the Orchid Cacti in bloom wants to get a collection. I use the 15 recommended by Marshall and Bock in their *Cactaceae,* pgs. 190-191, because I too have some of them and have seen the others in cultivation in private collections and they do bloom with a wide variety of form, color, and beauty.

I'm a late convert of Orchid Cacti but I'm planning another small addition to house a collection. Yes, I'm the guy who has too many plants now—but Orchid Cacti are the aristocrats of the clan—"I like them."

1229 8th Street, Lorain, Ohio.

DAN NEUMANN SAYS

Why don't you send 10 cents to Supt. of Documents, Washington, D.C., for Farmer's Bulletin No. 1872 "House Plants." There are chapters on adaptation, containers, soils, watering, summer care, kinds of plants for house care including some of the succulents, diseases, etc. Do not send stamps, checks or money-orders. It will be ten cents well spent.

EPIPHYLLUMS IN NEW ENGLAND

The climate of Auckland, N. Z., is said to be somewhat like parts of California. An occasional frost in winter, warm and humid in summer. There are a number of Epiphyllums procurable locally but in most cases names have become lost or misplaced. So as to be quite sure of my plants I set about importing cuttings from America. The first parcel took four months instead of the usual four weeks and had it not been for the ample wrapping and packing around each plant the whole lot would have been a complete write-off. Several of the bottom cuttings were a soggy mess, all the rest were very dry and wrinkled. Spindly new growth, pure white and up to an inch long had started from the tips of many of the cuttings.

Upon arrival I stood the cuttings in Transplantone for 24 hours and then inserted them around the inside edge of earthenware seedpans filled with sharp damp sand. At first I placed these on the glasshouse bench but the new growth started to turn brown with too much light. The pans were then placed in the cool under the benches and the "leaves" slowly fattened out and the new growth became green. When root growth started each plant was put into a 4-inch pot with a mixture of equal parts of soil, leafmold, old cow manure and small scoria (volcanic rock).

Some plants have put on considerable growth and my methods seem to suit them very well. When the plants have outgrown their pots they are planted into 12-inch square boxes and placed outside under the shelter of tea-tree. These trees are about twelve feet high with thin trunks and bushy tops and form a natural bush house allowing broken sunlight through. Five months after arrival several plants flowered and a year later every plant had its share of blooms. October-November is our flowering period with a number of the late varieties carrying right through to the New Year.

Growing along the stone walls of the old Penal settlement on Norfolk Island are two very large Epiphyllums, a red and a white. This prison was abandoned more than a century ago so it seems likely that these plants were introduced before then, probably by a prison guard.

A. B. CUTLER.

EDITOR'S NOTE: This interesting letter was sent to Cactus Pete, the well known Orchid Cactus grower.

EPIPHYLLUS IN ILLINOIS

You asked me to tell you how I treated my Epiphyllums. I never really thought I gave them any special treatment. You see I have two farms; one is a dairy farm only a mile from where I live. It was my old home where I raised my family. And my hardy flower garden is still there. So I go out often of course. It's a standing joke on me that I spend most of my time out back of the big barns where the manure pile is. The boys out on the farm are forever filling up my bushel basket of rotted manure.

Another thing I live where it was once a very wooded timber, so my soil here is sandy leaf mold. I just use this sandy leaf mold adding a little black rotted cow manure, a teaspoon of bone meal, and my Epiphyllums do the rest. I have sixty-three plants on a foot wide shelf, 32 feet long across the house. You see I have a national type greenhouse 32 ft. by 17 ft. I don't bother to stake them up, they just grow up against the wall, and stay there. Just now there are so many big fat buds I could not even count them. Needless to say I'm thrilled.

After they finish blooming I like to take them out side, on the east side where they get the sun all morning, and shaded in the afternoon. I let them rough it out all summer, and put them back on shelf for winter. Don't give them much attention, except a little water on warm sunny days. But in February a little more water and a dose of liquid manure after watering them. By March they get warm water sprays every day it's sunny and warm.

It's fun to watch the buds come out fast then.

In about two weeks my wall will be covered with blooms.

Just now I have a fairly large Rat tail cactus. It has sixty-five buds and blooms on it. And my Crown of Thorns is a solid mass of red flowers; has been all winter. I have hot water heat, out in greenhouse piped out from my furnace. But except for real cold days this heat is shut off.

In zero weather it gets as low as 45° some nights; in day time it reaches 70° if its real cold outside. Otherwise if it gets warmer than that I open the roof windows.

I have close to 1700 cactus and succulents. That's a lot for my little room. But they are all happy and healthy and if they are old enough they bloom.

Needless to say this old woman is happy and healthy too.

NETTIE M. KILLIAN.

SPECIAL BOOK OFFERS

THE STAPELIEAE—White and Sloane. The original one volume edition of 1933 with 236 illustrations. For the beginner and general collector this covers most of the plants found in collections. Order now at $5 before this becomes a collector's item like so many of the Abbey Press Books now out of print.

Cactus and Succulent Plants—H. M. Roan, England. This 1948 book of 60 pages is written for the amateur and contains many references to cacti and the other succulents, also growing methods, propagation, and month to month treatment. 112 illustrations. We are ordering these books from the National Cactus and Succulent Society of England and now is the time to obtain a copy for $1.75 postpaid.

Brazil and Its Columnar Cacti—Werdermann .....$3.00, postage 15c

COLORADO CACTI—C. H. Boissevain and Carol Davidson. An illustrated guide describing all of the native Colorado cacti. 73 pages with 46 illustrations and 1 color plate. $1.50. Cloth $2.00. Postage in U.S.A. 10c, foreign 15c.

A GUIDE TO THE DESERT PLANT COLLECTION —William Hertrich, Curator of Huntington Botanical Gardens. A popular introduction to succulent plants mentioning the most important families with their genera. 32 pages with 32 photos and one color-plate. Instructive and readable.....60c

KAKTUS—A B C. Backeberg and F. M. Knuth. Copenhagen, 1935. 432 pages of technical descriptions and illustrations of cacti. Written in Danish. While available at $6.50 cloth, $5.00 paper, postage U.S.A. 10c, foreign 30c.

Flora Capensis—Seven Volumes....$100.00 by Express

Flowering Plants of Africa, 23 Vols.....$500.00

Sales tax and foreign postage extra.

SCOTT HASELTON

BOX 101, PASADENA, CALIF.

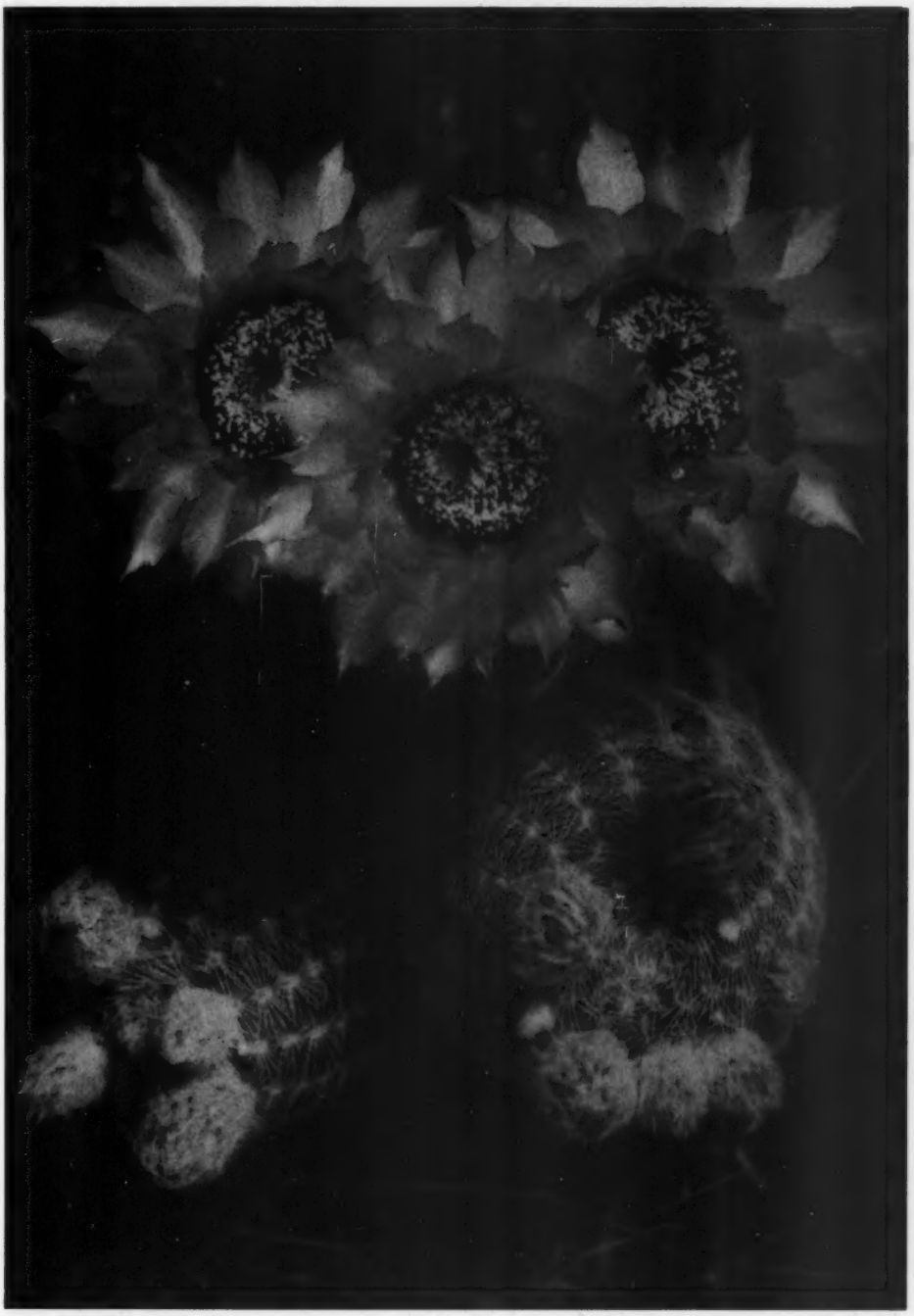


FIG. 53. *Echinocereus Reichenbachii* from Guy Quinn, Eastland, Texas. Collo-Color Print No. 1

FIG. 54. *Gasteria liliputana* Poelln. Photo by Jacobsen of type plant.

RARE SUCCULENTS

By H. JACOBSEN, Kiel, Germany

Translated by Mr. Myron Kimnach

Gasteria liliputana von Poelln. in Fedde "Repertorium p.p." XLV (1938) 159. (*Gasteria pulchra* Phillips in Pole-Evans, "Flow. Pl. S. Afr." IX (1929) t360-non Haw.). Cape Prov.: Peddie Road, 20 miles from Grahamstown. Stems very short, clump-forming; a rosette with spirally arranged leaves which are 3½-6 cm. long, 1-1½ cm. wide at the base, the outer ones spreading and often incurved at the tips, dark green, shining, spotted, lanceolate, pointed with a small tip, the upper side convex but flattened near the tips, the under side rounded, with a distinct ridge-like keel, with irregularly arranged light or greenish warts toward the base, and with a white or greenish margin which is serrate at the middle but smooth at the tips; spots rounded, 1-2 mm. in diameter, greenish-white on the upper side, irregularly arranged, rather numerous; on the under side the spots are more numerous, nearly white, and often arranged in diagonal masses; inflorescence 10 cm. long, flowers 15 mm. long, red.

A delightful species, by far the smallest of all Gasterias so far known. Because of the numerous offsets it is easy to propagate.

AMENDMENT TO THE BY-LAWS

At the Special Meeting of the Executive Board held April 22nd, 1949, the Board voted to amend Article III, Appointive Officers, Section 5, Librarian, to read as follows:

Section 5—Librarian. The Librarian shall have full charge of all books, papers, magazines and other publications and properties entrusted to his care. He shall present a report annually in triplicate to the Executive Board and one copy by the Secretary and the other by the Librarian. He shall make a verbal report whenever called upon to do so by the President at any meeting of the Executive Board.

The Librarian shall be held responsible for the careful retention and care of the Library during his term or terms as Librarian and shall relinquish the library properties to his duly appointed successor only when officially notified to do so by the Executive Board.

The Librarian shall maintain a card file and a bound accession record book listing all the books, magazines, publications and other properties entrusted to him and this file and accession book shall show the file number, the title, the author and the source from which the book was obtained, for each individual book or publication. If the book was a donation or gift, the file card and accession book shall contain the name of the donor and the date of the donation.

ETHEL RUSH, *Secretary.*

NEW PRICE LIST

Fritz Schwarz, Apartado No. 347, San Luis Potosi, SLP, Mexico, has issued his 1949 price list of cacti. There are 179 Mammillarias listed besides a great many other collector's items. Here is a chance for you to make direct imports for a fine collection. Please mention the JOURNAL.

FIG. 55. *Espostoa sericata* (Werd. and Backbg.) Backbg. at Huancabamba, Peru, with double cephalium. A large crest is also shown.

NEW WAYS IN CACTOLOGY

By CURT BACKEBERG

Translation by JOHN POINDEXTER

PART III

Gymnanthocereus: was placed in *Browningia.* Marshall states that he has seen it flower in his garden and it is "clearly a *Browningia,*" but he has obviously not seen the fruit. The differences are:

1. *Browningia:* Fruit with large scales which stand out and are persistent, becoming dried like parchment, floral remains adherent.

2. *Gymnanthocereus:* Scales soon becoming black and shriveling up. Fruit spherical, floral remains not so persistent as *Browningia.*

It is typical of *Browningia* that the main stem is heavily spined and the branches are naked. Typical for *Gymnanthocereus* is the reverse: old stem is naked and round, the branches are spiny and in old age are bristled at the tips. The habitat of *Browningia* is a dry waste, that of *Gymnanthocereus* tropical humidity. Such a contrast in the distribution of a genus is found nowhere else in the *Cereae.* Since the length of the tube (see *Dolichothele*) is of small importance to Marshall, one would be justified in placing *Browningia* with *Hylocereus* for the aerial roots must have even less significance, and large scales are certainly present in the latter. Perhaps through several such roundabout cases we might come again to the old twenty-one collective genera of cacti.

Anisocereus, Phillippicereus: Opposed to the argument "not sufficient." See my literature.

Weberbauerocereus: Here is a case of "not clear separation," according to Marshall. I quote Rose: "The flowers of this species differ from those of typical *Trichocereus* in that they are very slender, bent near the base, and have short perianth segments." Furthermore I have seen the species in flower and have many times observed the flowers on the branch. The flower is nearly S-shaped. Here is an excellent opportunity for the floral anatomy to be completely

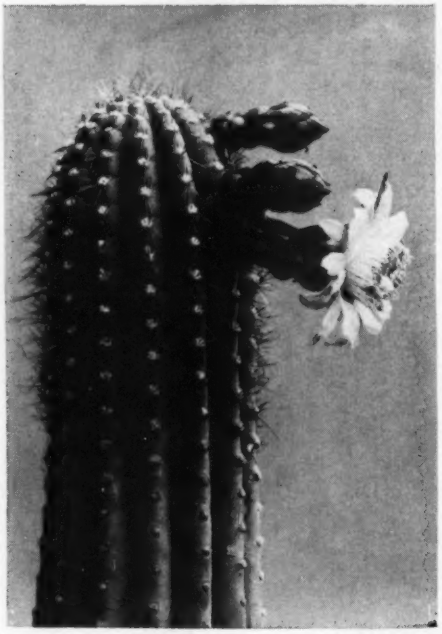


FIG. 56. *Gymnanthocereus* flower showing scales which soon become black and shrivel up, fruit round, not dry and practically without scales. Approx. 0.5.

decisive in the separation of two genera. On the West Coast of South America there are no *Cereae* with similar flowers. In Chile there is only *Eulychnia* and further to the South the "West Coast Trichocereae" with wide funnel-form flowers that stay open for several days.

Roseocereus: Here the conflict regarding justification for this genus is based on the tubercled fruit with wool felt that is also found in *Eriocereus*. However, with *Roseocereus*, the scales are three-sided and have red margins, the ovaries (as Berger mentioned) are "strongly tubercled, with long woolly hairs." Further, says Berger, "tree-like, very strong, erect." *Eriocereus* does not occur in Bolivia. Hence there is considerable support for the assumption of a special branch in the development of the cacti.

Thrixanthocereus: (Also recognized by Werdermann). "Belongs to *Facheiroa*," according to Marshall. The flowers, tube and margin are, however, completely different (see the descriptions by Rose and myself); the seeds of *Thrixanthocereus* are soft-shelled as in *Astrophytum* and are not found in any other *Cereus*. Buxbaum has written a penetrating study of this.

It is difficult to understand why Marshall has separated *Harrisia* and *Eriocereus* on the one hand and combined genera such as the above on the other. In all these cases no exact or uniform basis of judgment may be recognized, and a lack of knowledge of the living material is apparent.

Pseudoespostoa: This was united to *Espostoa*, overlooking the fact that the first has an erect cephalium, the latter, as was originally brought out by Humboldt, a grooved cephalium like that of *Coleocephalocereus*. The type of cephalium formation was not considered at all. According to Borg the genus is probably only a type of *Espostoa dautwitzii*. *C. Dautwitzii* is only a name. It comes from Huan Cabamba and is a

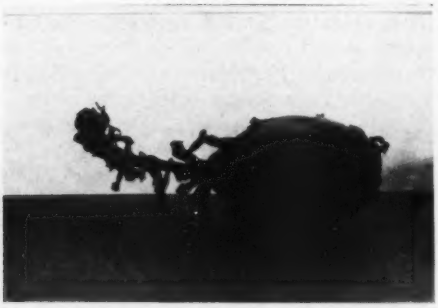


FIG. 57. Long scaly fruit of *Browningia* shows the long tube of the withered flower.

FIG. 58. *Weberbauerocereus* differs from *Trichocereus* in its narrow throat, curved tube with fewer hairs and the fruit is round, colorful and nearly hairless.

FIG. 59. *Thrixanthocereus Blossfeldiorum* (Werd.) Backbg. showing flower which is quite different from *Facheiroa.*

synonym of *Espostoa lanata* or *E. sericata;* Rose pictures it on page 62 (Vol. 2, Br. & R.) a *Pseudoespostoa* and mentions that Humboldt's *Cereus lanatus* came from Guancabamba. The Spanish often say "G" instead of "H;" The Humboldt plants came, therefore, from Huancababamba, where I collected them. Borg is mistaken.

Cleistanthocereus (Should be called *Clistanthocereus*), *Loxanthocereus,* and *Seticereus:* Marshall can "see no reason for separating these from *Borzicactus.*" There is no reason except exact observations.

1. *Loxanthocereus*—Flowers quite zygomorphic, open funnelform, with a long limb.

2. *Borzicactus*—Almost closed, flowers with a short limb.

3. *Seticereus*—The limb of the flower is in two series; there is a rather strong, bristly formation in the floriferous region.

To be continued

Wanted to Contact Members

Fred L. Gordon, 23 Luzon Ave., Providence, R. I., would like to contact fans in or around Boston and Eastern Massachusetts.

CACTI FLOWER IN VIRGINIA

Received my membership card and the inquiry about my Cactus collection. I first became interested in cacti when a friend gave me an Echinopsis off-set eight years ago. Since that time I have secured others from many sources. I have exchanged with others, ordered from nurseries, grown from seed and just recently received a box from a friend who is with the Air Force in New Mexico. The most of those from a nursery came from Johnson's of Paramount, Calif. They were bought as small plants and I have had the pleasure of growing them into nice sized plants. I had fair success with the first seed I planted and this spring I will be trying with seed gathered from my own plants as four of them grew seed pods last fall. (Gymnocalycium, Mammillaria and Echinopsis.)

As for flowers I have had blooms on the following: 4 Gymnocalyciums, 1 Euphorbia, 2 Echinopsis, 4 Mammillarias, 2 Faucaria, 1 Ariocarpus, 3 Lithops, Echeveria, 4 Stapelias, 1 Huernia, 1 Zygocactus truncatus, 1 Haworthia, and 1 hardy Opuntia.

My plants are all grown indoors in winter (except Opuntia and 1 Mammillaria) and on an open porch in summer for about four months. As I have no especially prepared place for them it is difficult to keep them from growing in winter as they just get started growing good when they must be brought inside.

Am interested in Cacti mostly as a hobby. Have given away many, sold a few, and had one *stolen.* During the summer they attract everything from grasshoppers to passers-by who stop to look and ask questions.

MRS. WOODROW MYERS.

CACTI IN MONTANA

Being situated in an area with rather severe winters and rather cool summer nights, I have to keep my cactus collection in containers which can be moved indoors or outdoors easily. This means using flower pots or bowls. I prefer to use glazed bowls since they are more decorative but as our climate is rather damp here, I have always had trouble with the soil remaining too damp after waterings and producing rot. I developed the following very successful solution to my problem, and I would like to pass it on for the benefit of others who have had similar difficulties.

I use a bowl three or more inches deep which is filled one-third of its depth with coarse gravel. The bowl is then filled the rest of the way with the soil mixture except at each end of the bowl the coarse gravel is extended to the surface. This extension of the gravel not only serves as a convenient place to apply the water but also allows the water to run directly down into the gravel layer and thus the plants receive their water from below as they should. It also allows the excess water remaining in the gravel layer to evaporate and thus the soil dries out faster.

MRS. DOROTHY CLOTHIER.

TURKS CAP

Pennock Gardens of San Juan, Puerto Rico, reports "most of the land on which Melocactus intortus grew has been cultivated and subjected to irrigation." Anyone knowing of a suply of specimen plants, please write to Chas. R. Cole, 3515 Evanston Ave., Cincinnati, Ohio, U.S.A.

This plant is to be installed in the conservatory at Cincinnati, and will have to be replaced from time to time. If the supply is not adequate will have to grow from seed and that will take time. Some that are three years old are only 3 to 4 cm.

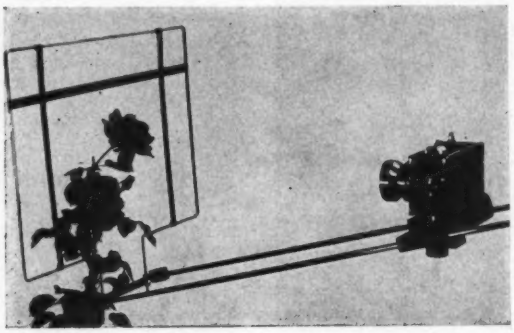


FIG. 60. "Cal-Cam" guide for close-ups.

MAKING GOOD KODACHROMES

From *News Bulletin,* American Iris Society, Region 18, Atchison, Kansas.

By RAY K. RICKMAN, Joplin, Missouri

So many of the slides made by amateurs are poor that it seems almost impossible to bring together a good collection of color slides for showing at group meetings. The difficulties center around improper exposure, depth of field, focus, and point of view. A little care and planning on the amateur's part will correct these faults. Good transparencies can be made and money saved if owners of 35mm cameras will obtain the correct equipment and familiarize themselves with its use.

The camera should be a good one with a reasonably fast lens. Kodachrome or Ansco daylight color films make the best pictures if used in a camera with a f/4.5 or faster lens. The f/4.5 lens is a good all around lens and fast enough for all practical purposes.

Do not guess the distance. If your camera does not have a range finder measure it, particularly for close-ups—anything under twelve or fifteen feet. If making an exposure longer than 1-50 of a second use a tripod. To eliminate the chance of moving the camera when taking the picture, use a cable release.

To bring garden pictures or subjects closer, use a telephoto or long focus lens. People having the more expensive cameras, such as the Leica, know how to use these lenses, but many have such cameras as the Argus, Clarus or Perfex, which are all good, but not as versatile as the more expensive ones, and they require a little more care to do the job. A good telephoto lens to use on these cameras is the Morton Magni-Far lens, which will increase the size of the image about two times and it does not affect the speed of the camera lens. It sells for about $49.00.

Everyone wants close-ups, pictures of individual blooms and clumps. For these you must have a special lens. Any one having trouble with close-ups should read *Portra Lenses and a Technique for Extreme Close-ups,* a handbook published by Eastman Kodak Company. It explains the technique for close-ups and how to make a focal frame that attaches to the camera to insure that the subject be in line with the lens. It is almost impossible to center the subject when using these close-up lenses without a focal frame, but with it, it will be located just right. Such a frame may be bought ready made from the Cal-Cam Company, 1564 N. Grand Oaks Ave., Pasadena 7, Calif., for $7.95.*

Portra Lens 1 plus or 2 plus may be used with this frame for close-ups, the 2 plus giving the larger image. The camera must be on a tripod or steady mount. The distance must be measured. The range finder cannot be used and it is impossible to guess the distance correctly. The lens must be in line with the center of the subject and the focal frame takes care of this. Since the depth of field is very shallow at short distances it is necessary to use the smallest lens aperatures, usually f/16 on most 35mm cameras. Instructions on focus, distance, etc., come with the lenses and must be followed to the letter or results will be terrible.

An exposure meter is very helpful, but not

*When ordering, send make of camera. Add sales tax in California.

always fool proof. It is best to follow F. W. Cassebeers suggestion (*The Iris, An Ideal Hardy Perennial,* p. 190) to take one picture at the meter reading, one with a little more exposure, and one with a little less. Out of the three one will be good.

A background should be used to eliminate the out of focus objects when taking close-ups. Heavy cardboards, about three by four feet, can be obtained from your paint, or interior decorating store. They come in colors from very light pastels to darker colors, and are made principally for decorating store windows. The cost is about 35c each and they make effective backgrounds, especially the pale sky-blue behind one of the new pinks, and the dark green behind bright yellows like Ola Kala. Several combinations may be tried out for best effects. These boards have a dull finish and they reflect little light.

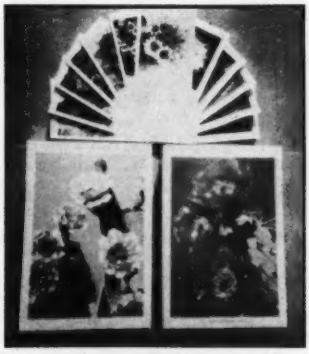
Pose your flower like a photographer poses his subject for a portrait. See that the angle is correct. Check the standards to see that they are perfectly placed. Check the falls to see that none are split and that they are in perfect shape and condition. Use your focal frame to center the bloom with the lens. Have an assistant hold the background. Focus your camera and measure the light for proper exposure. Set your shutter and lens aperature. Pull up a box to sit on, because when you get all set you will find a husky breeze doing its dirty work. Never mind the wind, but do not trip the shutter. Just sit and wait, with the cable release in your hand, until the wind stops blowing. When the flower is perfectly still, trip the shutter. Sam Caldwell says, "It makes one go quite mad and often foam at the mouth, but generally there is something pretty good on the roll to reward me."

The transparencies come back from the processor—the same old oblong pictures, with mostly too much back-ground unless it is a full garden view. Perhaps there is too much space in the sky-blue background to make the new pink show up well, or maybe the neighbor's laundry is fringing the top of the picture. Strange I did not notice the laundry when taking the picture! Don't throw these transparencies away, but write to the Gem Photo Specialties, 5817 Sheridan, Detroit 13, Michigan, for an assortment of 72 Gemounts for $1.20. These are round, oval, square, and several other shapes. They are to put over the transparencies to frame them. Put a round one over the single blooms. It cuts out a lot of background and directs attention on the picture. Another style may be used to cut out the neighbor's laundry.

BEAUTIFUL CACTUS BLOSSOM STATIONERY

Assortment 6 Box Tops 12 Different Cactus Blooms on sheets

Reproductions of ACTUAL KODACHROME PICTURES by R. C. Proctor, Claire Meyer Proctor, Josef Muench, Jerry McLain and Lithographed in Natural Colors.



Above shows example of Beaver Tail Cactus and Engelmann's Prickly Pear Cactus tops and assortment of 12 sheets (2 of each bloom in box).

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QUESTIONS and ANSWERS

Conducted by
HARRY JOHNSON
Paramount, Calif.

Question: What varieties of cacti will flower in central Florida? Mrs. C. J. Hampton.

Answer: If protected from excessive rain, almost all cacti will thrive. For outdoor plantings, a great many species will do well if beds are raised to allow full drainage. Most of the Cephalocereus, Cereus (particulalry the section Piptanthocereus which includes the larger tree cerei such as Peruvian Apple Cactus, etc.), Eriocereus, Harrisia, Selenicereus, Hylocereus, Leptocereus, and Lemaireocereus, thrive as will also a number of more obscure genera. The round, ball-shaped types such as Mammillaria, Notocactus, Gymnocalycium, Echinocactus, Neoporteria, etc., will in many cases do well. Your culture and local conditions will be the determining factors. Echinopsis and Trichocereus should prove quite adaptable. Of course most of the epiphytic genera are at home in Florida. As regards resting cacti, your winter temperatures are cool enough even though the temperature does not go lower than 50°. Your problem will be the protection from excessive cool and damp. As regards to the other succulents, the 50 inches of rain that you experience generally induces too luxurant growth which tends to make the plants lose the characters which make them interesting. Window gardens protected from rain can quite successfully grow all types of succulents.

Question: How do I make my Rebutias flower? Mr. P. L. Paxton, Illinois.

Answer: The Rebutias or Crown Cacti generally are in full flower in April and May. Some species flower very freely and with little trouble. Certainly they are amongst the very loveliest of all cacti and are worth a place in any collection. *Rebutia minuscula* is quite choice with dainty scarlet blossoms. *R. violaciflora* is a companion with brilliant pink, violet tinged blossoms. These both flower if well rested in winter by withholding water in December, January, and part of February. A cool temperature of 40° to 50° at night helps. They are among the earliest of all cacti to flower. *R. senilis, R. Steinmannii, R. Kupperiana, R. spinosissima,* and *R. Knuthianus,* flower freely when given a little more severe drying out at these low temperatures. During the day, of course, temperatures will rise which is fine. If dried out at high temperatures the plants become dessicated which is injurious to these higher mountain species. In March, a little more water may be applied until plants are plump. Buds begin to form around the base of the plant and shortly the exquisite blossoms are forming a bright ring. Almost every flower will set a seed pod which matures rapidly. Growth commences with the flowering. Being mountain plants, Rebutias like a little shade—not too much, for deep shade produces poorly matured growth that may fail to flower the following spring. I have counted 500 flowers on a well grown *R. senilis.* They are particularly fine subjects for the amateur who wants to practice grafting. *Trichocereus spachianus* is a good stock.

Question: Can I use "peat moss" in my potting soils? Mr. J. S. Norton, New Jersey.

Answer: Well, it's done but my own experience rules it out for me. Peat moss varies in chemical content so greatly that one never knows what will happen when it is used. Peat is formed in bogs, and bogs are formed by run-off water from higher areas. Chemicals in the water are concentrated by evaporation in the bog. Often these high concentrations are injurious to cacti. I have found leafmold far safer. True, leafmold is acid but a little lime or crushed limestone or old mortar will counteract its effects.

Question: When should I start my cacti into their spring growth? Mrs. J. L. Smith, Maine.

Answer: You are in a region where spring does not come too early. The season should be far enough advanced so that the plants can be given plenty of fresh air and quite a bit of light before one gets too impatient. Better to err on the late rather than the early side. April is plenty early and May is better. The actual growing period of cacti is generally fairly short even in their native habitats. Two or three months of actual growth tapering off to a longer maturation period generally suffices for best results no matter where one is situated. The failure of plants to bloom is most often traced to trying to keep them growing throughout the year. Remember they are desert plants and the spring season and rains are of short duration. That's why they are deserts.

Question: What size screen shall I use for sifting my potting soil? Mr. T. D. Rhodes, New Jersey.

Answer: A ¼-inch screen is certainly the smallest I would sugest. A ½-inch screen is better. Potting soil should not be too fine. Finely sifted soil packs too closely in the pot and does not allow enough air to enter. On the other hand it is possible to get it too coarse. A proper soil has both coarse and fine particles with the loam not broken into its smallest components.

Question: Are cactus fruits ever poisonous? Mrs. L. R. Laing, Washington.

Answer: So far as recorded, no cactus fruits are poisonous. On the contrary many of those with juicy fruits are quite palatable. In semi-desert regions the fruits of many cacti are eaten with much pleasure. The Spanish collectively called them "Pitaya" variously spelled and depend upon them as a diet variant. The best tasting fruits are Epiphyllums, Piptanthocereus, Lemaireocereus, and some Opuntias. Many of the Mammillarias, Mytillocactus, etc., have pleasant fruits, also.

TEN DOLLAR PRIZE

An enthusiastic member of the Society has contributed $10 as a cash prize for the best and most practical propagation box or miniature greenhouse for rooting cuttings or re-rooting plants. A drawing or photograph should accompany specifications. Send in your plans to the Editor, Box 101, Pasadena, Calif.

Perhaps some commercial dealer will offer prizes for the best article on growing plants in Canada or cold sections of the USA. Most of these growers do not have glasshouses. Should it be necessary to supply extra heat during the short growing season so that the plants will flower? In sections of the country where cacti are native, the cultural directions are of little help so send in your experiences and let's start discussions on this problem.

FROM OZARK COUNTY

I saw your ad in farm Journal so pleas tell me wher i can get the orcid cactus an will tha stay in ground in winter an stand a freeze tha sumtimes freeze in my house on put in basment the rats eat tham up your truly.

Elijah, Mo.

GAS-HEATED GREENHOUSES

Small private greenhouses can be very successfully heated with natural gas. However, one must have a stove or heater which does not discharge fumes in a great quantity. Good ventilation even in winter is a must. The humidity should be kept average or higher and that is the hard job.

Natural gas is not a poison to either cacti or succulents unless it is strong enough to replace the normal air. A gas heater, especially an open one, in a tight greenhouse burns up a lot of the air, it dries out the moisture and leaves a dead atmosphere. This does damage to the plants, especially the roots.

Here in Oklahoma we use gas entirely for heat and before I learned to keep constant ventilation I had trouble, but not from fumes. My trouble was dry air and dead air. Now I leave ventilators open even in the coldest winter (small ones at the top at one end, and a small one at the bottom, in the door, at the other end, so I get some air circulation). Since this system was established, I have not lost a plant, not even my tender tropicals like bromeliads and pedilanthus.

No, natural gas will not harm plants at all if ventilation is provided with some circulation and reasonable humidity. The above should burn a clear, blue flame, however, But *Artificial Gas* such as used in some eastern cities will kill everything including cacti. It is very, very toxic to all plant life. (Did you ever see flowers around a coal-gas manufacturing or storage plant?)

Natural gas does not affect the blooming of plants either. My Epiphyllums bloom beautifully and do not drop their buds, Zygocactus is loaded every year. Bromels bloom and last a normal length of time.

But *give Ventilation.*
Keep *Humidity up.*
Circulate the air.

G. L. BERRY,
908 Arlington, Lawton, Oklahoma.

HEATING WITH NATURAL GAS

Percy Harrison has sent in a plan of his natural gas heating system for his Canadian collection. This was in answer to a query in the last JOURNAL. Will some draftsman volunteer to re-draw it so that it can be reproduced in the Journal?

DESERT GARDENS

By DR. LOUIS E. BLANCHARD

From *Your Garden and Home* Magazine, Canada.

Desert plants represent highly specialized forms of plant life adapted to arid conditions and consist of cacti and other succulents such as agaves, echeverias, stapelias and sempervivums. Although widely scattered, most of the succulents are found in Africa, Mexico and many parts of the United States. Cacti are native to the western hemisphere and are descendants of the leafy *Pereskia,* the ancestor of all cacti. There are about two thousand species of cacti and many more thousands of species of other succulents.

Groups of plants growing in widely separated places under similar climatic conditions develop a similarity known as parallelism. The euphorbias of Africa resemble the cacti of the Americas but are definitely not related. The size of these plants ranges from a fraction of an inch to that of tall trees. The Giant Saguaro of Arizona grows fifty feet high and by the time it reaches its maturity in about two hundred years, weighs ten to fifteen tons.

Desert plants in the distant past flourished in tropical climates and had leaves and woody stems. As the geological changes produced deserts and mountains with dry air and limited rainfall, these plants had to adapt themselves to these changes of environment or perish. Undoubtedly many species succumbed but those that met the challenge were successful because they acquired the essential physical change known as succulence.

Thick juicy stems or leaves, especially adapted for water storage in periods of prolonged drought, made life possible in such depressive periods. Thick leathery leaves of the opuntias, waxy coatings of the astrophytums and hairy coverings of the Old Man cactus (*Cephalocereus senilis*) are further examples of protection against loss of moisture. The plants also assumed many unique and bizarre forms, all of which were evolutionary changes in the development of a defense mechanism. Multiple ridges with accordion-like contours allowed for contraction and expansion in periods of drought and rain. Absence of leaves and branches allowed heavy plants to have a minimum of surface exposed to evaporation. Spines served as a protection against enemies and also gave partial shade.

The sugars in the plant juices were converted into pentosans which are thick and syrupy. In this form, losses by evaporation or injuries are trivial. Brilliant pigmentation prevented chlorophyl destruction in prolonged brilliant sunshine and, in some species like the Sacred Mushroom (*Lophophora Williamsii*), large fleshy roots stored food and water. These and other similar defense mechanisms made it possible for succulent plants to withstand long periods of

Continued on page 92

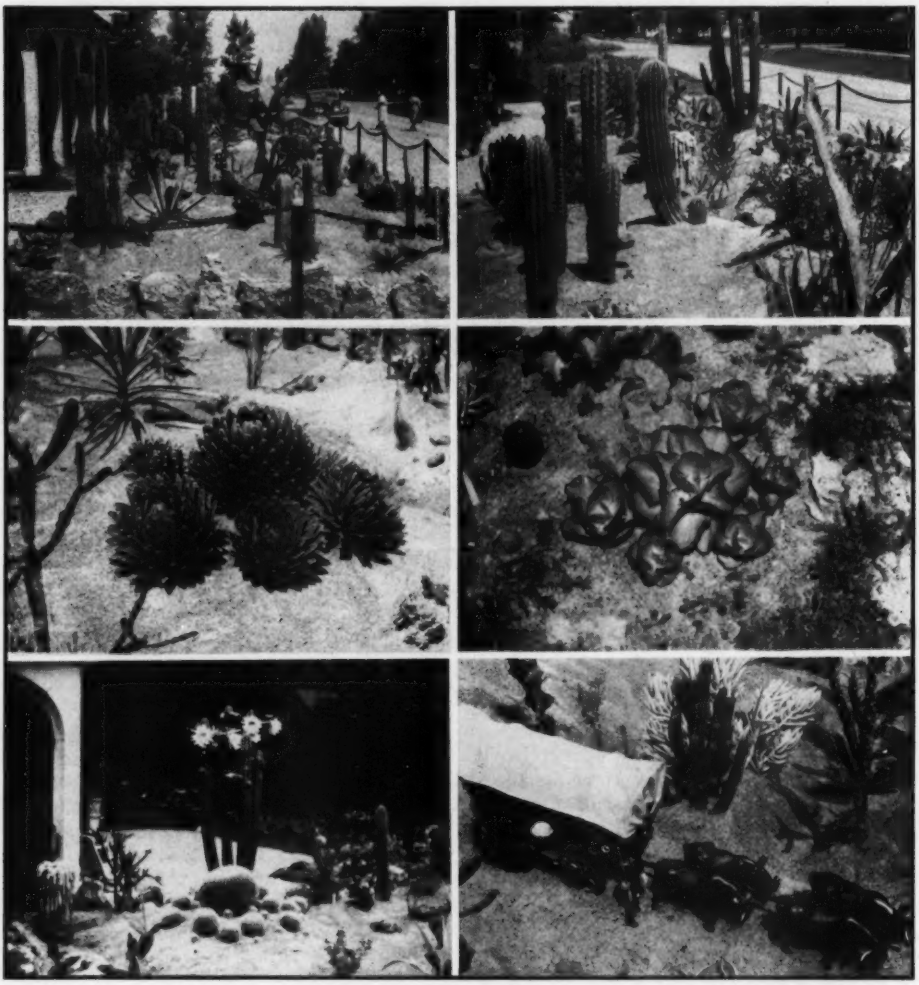
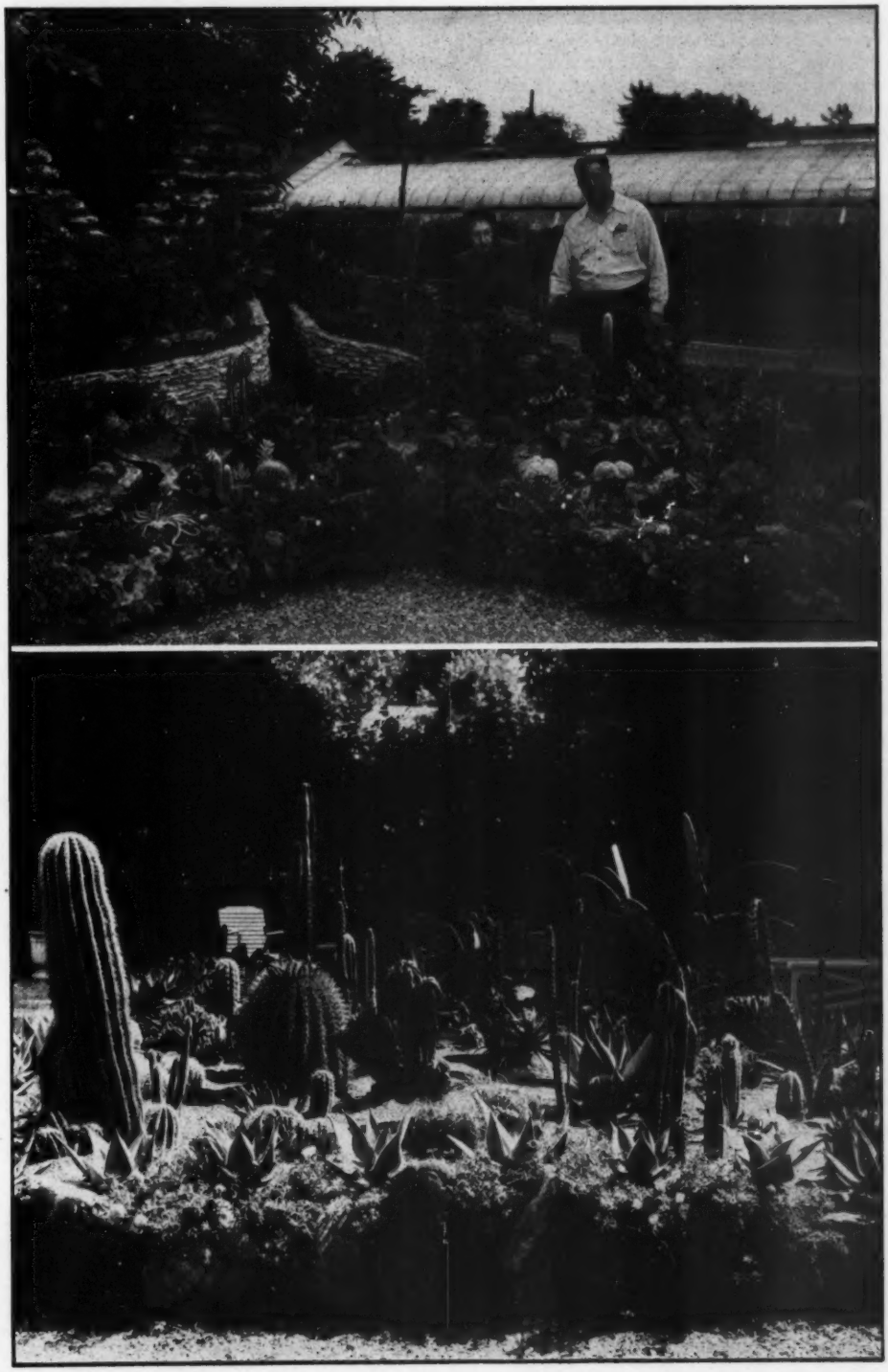


FIG. 61

COLLECTION IN SOUTHERN ONTARIO, CANADA

Dr. Louis E. Blanchard, owner of the Blanchard Industrial Clinic in Buffalo, New York, has assembled one of the outstanding succulent collections of today. For 20 years Dr. and Mrs. Blanchard have travelled thousands of miles seeking plants to add to their display that attracts thousands of garden lovers at their summer home at Bay Beach, Canada. Their "Painted Desert" contains thousands of plants and eight gardeners are required to maintain the summer layout. Three vast glasshouses are required as winter quarters. In the summer, throngs of sight seers are welcomed daily. Dr. Blanchard's exhibit at the Canadian National Exposition last year was the outstanding attraction. JOURNAL readers may look forward to articles and notes by Dr. Blanchard in forthcoming issues of the JOURNAL. We would like his explanation as to why succulent plants take on the strong colorations from the action of the sun as well as from the cold. Also, why do some plants freeze solid without harm while others go to pieces. Is there any reason to believe that a hybrid plant is any more frost resistant than a true species? This series will concern the hardiness of cacti—a timely subject, indeed.

FIG. 62. (Pg. 91) Dr. and Mrs. Blanchard give their personal attention to a corner of their collection. BELOW: A section of their summer garden at Crystal Beach, Ontario, Canada.



drought, even as long as several seasons. In times of depression, these plants have the ability to become dormant and will patiently wait for months if necessary, to burst forth in extreme activity with the appearance of favourable conditions. In a very short time the desert plants come into bloom, bear fruit and store up water for future emergency. Time is of the essence. It is a question of life or death. These plants are with us because they are champions.

Although desert plants can endure hardships, they naturally, like all living plants, prefer favourable conditions. In pot culture or in the garden, the soil should be kept moist (not wet) during the growing period. Excess water causes rot and interferes with respiration. In the winter, watering should be less frequent, possibly once every three weeks. Never allow the soil to become powdery dry as this will damage the roots.

These succulents, due to their ornamental shapes and varied colors, are the jewels of plant life and lend themselves admirably to realistic scenerey in dish gardens. Most dish gardens have no drainage and it is essential that a measured amount of water be used. A small dish garden about six inches in diameter will require about one half cup of water weekly in the summer. Larger dish gardens will need about one cupful of water. In the winter the same amounts will be ample for three weeks or more. In case of doubt, dig a hole into the soil for proper inspection. If moisture is present, do not add water. Overwatering in dish gardens is the major cause of failure.

Desert plants make excellent garden displays. Use elevated beds, about one foot deep, to provide good drainage. Place several inches of coarse gravel on the bottom and fill with coarse sand, preferably sharp or builders' sand. Potted plants plunged into this sand with mound formations, make fascinating desert scenes. This method conceals the pot rims and makes the scenery more realistic. Take plants indoors before frost and keep them in a cool room or use them in a window garden. Water sparingly during this resting period and do not apply any fertilizers. In the spring, when the plants show signs of activity, increase the amount of water.

If plants are pot bound, they should be shifted into larger pots. Increase the pot size by one inch. A good potting soil consists of one third top soil, one third leaf mold or rotted cow manure and one third sharp sand. To this add about five per cent each of chick charcoal, lime, and bone meal. Mix thoroughly. The epiphyllums (such as the Christmas cactus) do best in an acid soil and lime must not be added. Good drainage and considerable shade are essential in this species. They also like a steady supply of moisture and will probably require watering twice a week. A layer of fine gravel on top of the pot will help discourage the growth of algae and keep the plants clean.

Such prepared soils will require no additional fertilizer for one season. After this period, complete liquid fertilizers, properly diluted, are beneficial. Several applications a season are ordinarily sufficient. Desert plants as a rule are slow growers and, therefore, do not require frequent feeding. Excessive applications of fertilizers will either cause root damage or build up such a high osmotic pressure in the soil from soluble salts that water absorption by the root hairs becomes difficult.

Many desert plants, particularly the epiphytic species of cacti, have gorgeous blooms in many colors. Cacti are either day or night bloomers and their exotic blossoms equal the beauty of the choicest orchids. Their fragrance is delicate and one flower will perfume an entire garden.

Although cacti and other succulents are comparatively free of pests and diseases, some varieties may get infested with mealy bugs, scale, thrips and red spiders. Contact sprays regularly applied will keep plants clean. An oil spray will be necessary for mealy bugs. Root mealy bugs may cause considerable trouble. The pot may require dipping in a contact spray or the soil may be completely washed away until the roots are clean and then re-potted.

Succulent plants can be propagated from seeds, offshoots and cuttings. It is advisable to sterilize the cactus soil and the container to prevent damping off. Sift enough sterile sand over the seeds to cover them. Do not allow the surface to become dry.

Offsets (called pups on cacti) may be removed from the parent plants with a sharp knife. Dip the cut ends in sulphur and plant in cactus soil. If cuttings are taken, dust the open surfaces with sulphur and do not plant for about one week or until a callus is produced. The cuttings may then be rooted in clean sterilized sharp sand and as soon as there is root formation, they may be planted in soil. Many erroneously believe that desert plants grow in pure sand. This is not true. Succulents placed in sand will starve. The desert is rich in minerals and leaf mold and only requires water to convert it into a good growing soil.

EPIPHYLLUM HANDBOOK by Scott E. Haselton (1946). This first book on Epiphyllums and their hybrids gives their history and parentage as well as the flower parts and how to make descriptions. Complete cultural and propagation information. Explains hybridizing with pictures of all the plants used. Contains 250 pages with 170 photographs and 11 color plates. Price $3.85, postage U.S.A. 15c; foreign 50c,

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FIG. 63. *Coryphantha arizonica* (Engelm.) Br. & R. grows in large clusters in the hills of northern Arizona. Rose-colored flowers about 2 inches across.

CACTUS CULTURE IN ENGLAND

By E. SHURLY

EDITOR'S NOTE: Mr. Shurly, as most of us know, is the Mammillaria specialist in England and the Editor of "The Cactus and Succulent Journal of Great Britain," which was founded in 1931; quartely $2.50 per year. Vols. 8, 9, 10, and 11 (1949) are priced at $10.00, direct or through Box 101, Pasadena, Calif.

Your Editor asks for articles on cultural conditions in your States, but you may like to have some details of England. Our climate is peculiar, but it is possible there are districts in your country with somewhat similar conditions and those of your readers living there may find some interest in the following.

In comparison with the Continent of Europe, our climate is unstable. When I lived in Holland, Switzerland and other Continental countries, I found a stable climate with fine or wet weather in spells and you were able to dress accordingly, but in England the weather is so unstable that it is almost unpredictable and it is not unusual to have fine weather in early morning and be soaked in heavy rain when going out for lunch. To get sun, rain, wind, snow and frost, even fog, in one day is possible in the colder months. A further complication is that we, very frequently have damp, muggy days when everything, inside and outside the house, is dripping with moisture.

Naturally, the summer months present to us, as cactus cutlivators, the fewer problems as although we rarely get the long spells of sunshine that you experience, yet our weather is reasonable enough to present few difficulties and we can leave the windows of our greenhouse open day and night. The lack of continuity of sunshine is probably the greatest disadvantage we have in summer. With long spells of sun you can flower and ripen plants where we cannot. When sunshine is intermittent there are many plants that just will not flower or set fruit and, frequently if the summer has been damp rather than sunny, the plants are soft at the onset of winter and are more liable to be affected badly by the cold weather.

Spring and autumn are seasons that present the difficulty of damp and it is during these months that we frequently have days when everything is ringing wet. I do not need to emphasize that this is not the kind of weather that favours the culture of cacti and many plants, particularly if soft.

The soil of any country is attuned to its climate and, naturally, the soil of England is, generally speaking, retentive of moisture and, because of that, failure is usually experienced in trying to bed out cacti. Some plants will live outdoors, but it is a mere existence except in the favoured spots of the south-west. Many attempts have been made to grow them in the open, but it is only in Cornwall and the Isle of Wight that I have met instances where the experiment has been successful.

It is the winter to which we look with trepidation. I have already explained that, owing to our dampish climate and our intermittent spells of sunshine, our plants do not harden off suitably to resist frost. They resist cold to some extent, but frost invariably is fatal. Greenhouse culture, therefore, is essential and our first preliminary before the onset of winter is to see that our greenhouses are weather tight.

Our really winter months are January and February and the snowy Christmas card scenes have been relegated to the limbo of the past. Till the New Year the enemy is dampness. In the first two months of the year we get practically all the severe weather we have to guard against and the only remedy is heat, and, incidentally, heat is also the only remedy for the damp of other months.

We are terribly short of fuel and it is only the lucky few that can have adequate heating by electricity or hot water pipes. No allowance is made for fuel for greenhouses and so the cultivator has to be extremely economical if his dwelling house is not to suffer. The vast majority of our collectors have recourse to the less efficient methods of paraffin lamps and the like.

Only those living in your damp areas can have some understanding of the difficulties with which we have to contend. It is unlikely, however, that they also experience the intermittent sunshine which is our lot and so they can only partially understand.

When winter is really bad and with the lack of fuel all sorts of subterfuges, such as covering plants with newspaper or brown paper, were tried with some success, but the loss of plants was extremely heavy throughout the country. In the majority of cases it had to be left to the luck of the site and the vagaries of the weather.

The summer of 1947 was exceptionally fine and we had unusually long spells of sunshine and it is to the benefit our plants received during these weeks that we look for success in combatting the probable rigorous of other winters. What we experience is in the lap of the gods, it may be a real hard winter or it may be damp, cold weather we so usually experience, but we are on the qui vive and we hope to be able to forestall either Nature's batteries and assaults.

Then let you Americans give us the credit for growing cacti at all and do not be too disdainful if we cannot produce plants so fine as you can.

SPINE CHATS

LADISLAUS CUTAK

In the Cactaceae one is occasionally confronted with species that are very uncactuslike. One such plant is *Leuchtenbergia principis,* which looks more like a dwarf Agave than a cactus. This unique Mexican endemic is characterized by long, hard, angled tubercles arranged in rosette fashion, each tubercle surmounted by an areole featuring long, thin, flat, papery spines. Because of its resemblance to a Maguey, one of its common names is "Agave Cactus." Sir William Hooker is the author of both the generic and specific name which has now been used for over a century. It commemorates Eugene de Bauharnais, who was Duke of Leuchtenberg and Prince of Eichstadt and a noble French soldier-statesman. It is a difficult cactus in collections but can be grown in a rich loamy soil with perfect drainage and full sunlight but you have to be stingy with water.

Leuchtenbergia principis is composed of a short woody stem, elongated tubercles and a simple or branched carrot-like taproot. The thickened stem is mostly hidden in the soil and only the erect, ascending and widely-spreading tubercles are noticeable above ground. The tubercles are bluish-green, or sometimes reddish to purplish at the tips and along the angles, truncate at the apex, and up to 5 inches long. The oldest tubercles die off and leave broad scars on the stem, very much like some of the cycads after their leaves have fallen. Wool is produced in the axils of the tubercles. The areoles are located at the tips of the tubercles and these are cottony or woolly in youth. Each areole bears a tuft of flexible, papery spines, composed of 7-14 radials and 1 or 2 centrals. The radials average 5 cm. long while the centrals are usually 9 to 13 cm. long. Flowers appear in June and last several days. They are satiny yellow, somewhat fragrant, nearly 4 inches long, and appear from just below the tip of the young tubercles near the center of the plant. The blossoms are funnelform and when expanded to the full measure 4 inches broad. Outer perianth segments are yellowish but with a lightly-tinged reddish cast and a brownish green stripe down the middle. Inner perianth segments are oblong, acute and serrate at the apex. Stamens are numerous, almost 1.5 cm. long, arising from the base of the petals, yellowish, incurved at the tip where reddish, and producing a crimson circle around the spreading stigma. Anthers yellow. The style is 2 mm. thick, 3.5 cm. long and yellow, with 13 spreading, subulate stigma lobes recurved at the tips. Several imbricated, broad, red-tipped greenish scales are found on the ovary and tube, these naked in their axils.

* * *

Three new succulent asclepiads are described in Kew Bulletin (No. 3, 1948) by E. A. Bruce. They are tropical African plants from the Mwinilunga District of Northern Rhodesia. The first is *Brachystelma prostratum,* a perennial with a slightly flattened subspherical tuber. It is an inconspicuous little plant characterized by a prostrate habit. The stems radiate from a central point and lie close to the ground, whilst the leaves stand up erectly in pairs. The other two new succulents are species of Ceropegia. *C. filiformis* is a perennial with a spherical tuber from which are produced wiry stems with 2-3 pairs of reduced leaves. *C. rostrata* is another perennial but with very many thick and fleshy roots, not at all tuberous. Its leaves are dull green, oblong-elliptic and the flowers are sausage or balloon-like in appearance, white to deep purplish brown and speckled.

* * *

The second edition of "Flora of South Australia" by J. M. Black was issued in 1948 and Part 2 contains information about families possessing succulent plants. From it we learn that *Opuntia monacantha* is found in hedges, fields and roadsides; that *O. inermis* at one time covered several hundred square miles of northern New South Wales but has now been exterminated by cochineal and other imported insects; and that all the Opuntias in South Australia have been classified as noxious weeds, which includes such introduced species as *O. stricta, O. tomentosa, O. aurantiaca* and the two already mentioned. We learn, too, that the Aizoaceae is represented by 14 genera of which Cryophytum, Aptenia, Psilocaulon, Drosanthemum, Carpobrotus, Sarcozona and Disphyma are wholly succulent. Most of these are escapes from gardens but *Sarcozona Pulleinei* is Australian. They are found on railway embankments, on sandhills, along the sea coast and elsewhere. The Crassulaceae is represented by six species, classified as *Crassula colorata, C. Sieberiana, C. bonariensis, C. recurva, C. macrantha* and *C. pedicellosa,* all of these belonging to the section Tillaea.

* * *

Pachypodium namaquanum, which is found throughout the Richtersveld and northern Namaqualand, especially on quartzite koppies and mountains, is commonly known there as "Halfmens" according to John de Villiers in a short story appearing in the August, 1948, number of "African Wild Life" (2:54-56). The name is apt for from a distance the plant looks very much like a human figure, with its upright trunk up to ten feet high, without any branches, surmounted by a leafy "head." The Namaqualand natives, with their wealth of veld-lore, wove legends about this peculiar plant. One version has it that a stronger tribe from the north raided their weaker southern neighbors, who were utterly routed. The victors, as was the custom, put most of the vanquished males to the sword and carried off their women. The remaining men among the southern tribe mourned the loss of their women, keeping their faces continually turned northwards in the hope that they would see their lost wives and sweethearts returning. In the end they died of broken hearts, and a compassionate God, marveling at the constancy, changed them into the well-known "halfmense," in which form they still maintain their northward vigil in hopeful expectation of seeing the return of their abducted women.

* * *

E. Milne-Redhead reports in "Kew Bulletin" that a new name is necessary for the little *Aloe concinna,* since Baker's name is illegitimate, the epithet having been used earlier for the plant now known as *Haworthia viscosa* var. *concinna.* He proposes for it the new name, *Aloe zanzibarica.*

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